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ABSTRACT

Although universities require that their faculty be "productive," a study suggests that definitions of research productivity vary, depending on the respondent's position within the university hierarchy. Definitions of productivity employ different metaphorical descriptions, constructs, statements of fact, and practice. University administrators and the deans, department chairs, and faculty at a college of agriculture at a northeastern university agree that the "ideal" productive scientist: (1) is self-directed; (2) does research that answers important questions; (3) communicates results in all appropriate ways; and (4) is recognized by the scientific community and by others he or she serves. However, the respondents differ in how productivity should be measured. University administrators tend to emphasize the importance of a national reputation and publication in refereed journals, while college deans, department chairs, and faculty tend to support a variety of outputs and practices. Efforts to measure research productivity must address the fact that there may be an "assumed but not actualized consensus" as to what constitutes productivity. But simply identifying different definitions of productivity is not enough; administrators and faculty must negotiate an acceptable definition, complete with institutional support, rewards, and sanctions. (A list of 25 references is attached.) (Author/SG)

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Consensus Falsely Presumed: An Organizational Culture Approach to Defining the Research Productivity of Agricultural College Faculty

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Universities require that their faculty be "productive." However, we found that definitions of research productivity vary, depending upon the respondent's position within the university hierarchy. Such definitions are highlighted by different metaphorical descriptions, constructs, statements of fact, and practice.

University administrators and the Deans, Department Chairs, and faculty in a college of agriculture at a northeastern university agree that the "ideal" productive scientist: 1) is self directed, 2) does research that answers important questions, 3) communicates results in all appropriate ways, and 4) is recognized by the scientific community and by others he or she serves.

However, the respondents differ in how productivity should be measured. University administrators tend to emphasize the importance of a national reputation and publication in refereed journals, while college Deans, Department Chairs, and faculty tend to support a variety of outputs and practices.

Efforts to measure research productivity must address the fact that there may be an "assumed but not actualized consensus" as to what constitutes productivity. But simply identifying different definitions of productivity is not enough; administrators and faculty must negotiate an acceptable definition, complete with institutional support, rewards, and sanctions.

Introduction

Because his faculty had received a low rating for "research productivity" from the central administration, the Dean of a college of agriculture decided his faculty needed training to improve their writing skills. He approached the college research editor for help.

The editor suggested that they first determine what was meant by "research productivity" and identify how it was measured, by whom, and with what consequences. Only then could appropriate action be taken, she suggested. The Dean agreed to this approach.

This article describes some of the findings from a larger study (Donnellan and Ross, in press) that resulted from the editor's questioning. In this paper we will explore literature related to research productivity and organizational communication, analyze the definitions of productivity used by four different audiences, and then discuss what options (in addition to writing workshops) are available for enhancing productivity.

Literature review

Scientists at universities are evaluated for their research productivity; however, the question remains as to what, exactly, is meant by that term. Organizational culture researchers point out that productivity studies usually have a management bias (Pacanowsy and O'Donnell-Trujillo 1982; Putnam 1983). That is, such research tends to help managers find ways to increase productivity, as they define it.

Research productivity usually is defined in terms of publications (Fox 1983, Reynolds 1971). Many studies have shown that tenure, promotion, and salary decisions at universities depend heavily on quantity and quality of publications (Crane 1965, Gaston, 1970, Hagstrom 1971, Meltzer 1956, Siegfried and White 1973, Zuckerman 1967). The rationale usually is that the quality of a researcher's publications can easily be evaluated by experts (i.e., manuscripts are accepted for publication and ultimately cited or ignored) and that such publications often attract national attention and indicate a scientist's intellectual growth.

Quantity of publications usually has been chosen over quality as a measure of productivity. Abdel-Ghany (1982), who studied academic home economists, articulated this methodological decision in this way:

> In an operational sense, quality is someone's subjective evaluation, for there is no way of objectively measuring or assessing what is an attribute of value (p. 121).

Teaching ability and public service tend not to be included in definitions of research productivity. These activities, unlike publication in national journals, are more likely to receive only local recognition. Thus, the price paid for these latter skills may be low (Abdel-Ghany 1982). Rogers and Agarwala-Rogers (1976) caution us not to limit our evaluation of productivity (or any human behavior) to just the source's viewpoint--in this case, the viewpoint of administrators who want to increase productivity. Rather, we must try to understand the effects of administrative messages from the receiver's viewpoint as well. In other words, what administrators think constitutes research productivity may not be the same as the faculty's perception of that construct.

Our approach to the topic of research productivity was predicated on the assumption, to paraphrase Putnam (1983), that the college of agriculture is not a monolithic entity but a coalition of individuals with differing priorities. We believe that these individuals, as Weick (1979) has observed, can negotiate their goals, actions, and meanings to achieve a common direction by not abandoning their different aims, but rather by subjugating them to the immediate needs of the group.

In this case, the need, as initially perceived by the Dean, was to increase research productivity. In a university where productive scientists are rewarded, individual researchers might reasonably be expected to want to be productive. But without a clear, agreed-upon standard for productivity, accompanied by enforceable consequences, taking action to improve productivity (i.e., by teaching writing workshops) appears premature. Research shows us that simply becoming aware of different definitions of productivity may not necessarily lead to a negotiated consensus of what the term should mean. Zey-Farrell and Aiken(1981) argue that "If

the status quo is not enhanced by the findings of researchers, managers do not have to act on them" (p. 6).

Conley and Bacharach (1990) identify an inherent tension between a professional ethos, left to the discretion of professionals, and bureaucratic values, maintained by administrators through specified rules. Sink (1985) has suggested that administrators and researchers have distinct roles in promoting research productivity. Specifically, the university and its administrators must seek to enhance the institution's climate for the pursuit of faculty scholarship while faculties must keep research productivity high.

Recent publications have suggested motives and models for collaboration to achieve these distinct missions. For example, Clark and Centra (1985) found that the "academic ability and training" of individual researchers seemed to influence research productivity mainly depending upon where one worked and what one did.

Tack and Heberlein (1987) outline five steps to advance productivity:

1. Determine how a person's research fits within the institutional mission.
2. Identify how involved the faculty member is in research.
3. Identify necessary staff and associated costs for the research.
4. Allocate institutional funds.
5. Monitor and evaluate research services and output.

Faculty participation in at least the first three steps listed above could foster participative decision-making. Tack and Heberlein obviously do not address specific skills, such as writing, that researchers might need to enhance productivity. Negotiated decisions between faculty and administrators might in fact include such training, although there may be more important aspects to enhancing productivity.

Purpose of this paper

Because research productivity is an important component in the evaluation and promotion process at universities, one might assume that the definition of productivity and the criteria for

evaluating it are well understood and shared by administrators and faculty. To test this hypothesis, we decided to survey the opinions of administrators and faculty from one particular college (agriculture) at a northeastern university.

This report will present the responses to two questions that we posed to administrators and faculty:

1. How would you define a productive scientist?
2. What standards of scientific productivity are currently being applied to the faculty of the college of agriculture?

Another study addresses the question of what factors influence the research productivity of college of agriculture faculty (Donnellan and Ross, in press).

Methodology

Population

We surveyed four different groups: university-wide administrators (the Vice President for Academic Affairs and the Chair of the faculty-led Academic Affairs Committee); college-level administrators (the Dean and Associate Dean of the Agricultural Experiment Station, the research branch of the college); Department Chairs; and faculty. Nine Department Chairs were interviewed; this included the current Chair of eight departments, plus the incoming Chair of one of these departments.

Colleges of agriculture are somewhat unique in that they, unlike most other colleges, can draw from a pool of federally and state-mandated research money. Such money is not automatically received by the faculty, however, and especially in these economically depressed times, must be supplemented by other grants. Agricultural researchers frequently do applied research for specific audiences. Also, agriculture faculty tend to deal with the public more directly and more frequently than do their colleagues in other colleges, which may influence how they spend their time and thus how they measure their productivity.

Faculty in colleges of agriculture usually have split appointments, with their responsibilities divided among teaching, Extension Service (outreach), Experiment Station (research), or "other" (e.g., entrepreneurial or lab work). At the studied institution, faculty with primarily Extension or outside research appointments are not eligible for tenure.

For this study, we approached all 78 faculty on the college of agriculture mailing list, including faculty without any assigned research time. One goal of this study was to determine whether a person's major job responsibility affected the evaluation of his or her productivity.

Sampling plan and data collection

In April and May 1984, we interviewed the Department Chairs, college deans, and university administrators to determine existing standards of productivity in the college of agriculture. Each of these people plays an important role in reappointment, promotion, and tenure decisions.

As a result of these interviews and a review of the literature, we designed a questionnaire and pilot tested it on six faculty in a neighboring university's college of agriculture. We tested a revised questionnaire on selected faculty in a different college at the target institution before administering the final version to the agriculture faculty.

The final questionnaire contained three parts: background questions (e.g., age, sex, rank); short answers and a review of past accomplishments; and short statements followed by Likert-type scales on which the respondents could indicate their opinions about certain topics. Research assistants contacted the faculty and administered the questionnaire; this way, we (the principal researchers) did not know who chose to participate. Those who did not were asked why and their answers were recorded.

Of the 78 questionnaires distributed to faculty, 65 (or 83%) were returned; 62 questionnaires were usable. Reasons given for not participating included lack of time, illness, and questions about the nature of the study.

Data analysis

Data were analyzed statistically and textually. Essay responses were reviewed and a master coding sheet prepared, thus reducing the responses to a number or series of numbers. Each questionnaire then was coded independently by two research assistants, and cross checked by a principal investigator. Responses were nominal-, ordinal-, or interval-level data. Measures of central tendency were determined, and the following tests were performed: Spearman's rho, Kendall's tau, Mann-Whitney, Kruskall-Wallis, and Wilcoxon Rank. Since these quantitative results have been reported elsewhere (Donnellan and Ross, 1990; in press), most are not discussed in this paper.

Our textual interpretation reported here uses methods consistent with the organizational culture perspective of studying organizational communication. We categorized written and spoken messages produced by our respondents according to a taxonomy of "indicators and displayers of organizational sense making" suggested by Pacanowsky and O'Donnell-Trujillo (1982). This approach is consistent with Deetz's (1982) description of critical interpretative research based upon textual analysis.

Pacanowsky and O'Donnell-Trujillo's taxonomy includes relevant constructs, facts, practices, vocabulary, metaphors, stories, and rites and rituals. We charted our data on matrices by respondent, by hierarchical level, and by the categories in this taxonomy. We found our richest data in four categories: relevant constructs, facts, practices, and metaphors. Therefore, we decided to concentrate our analysis upon those categories.

Pacanowsky and O'Donnell-Trujillo (1982) define the four categories in the following manner:

* Relevant constructs are "...a set...of objects, individuals, [and] processes used by organizational members" (p. 124). In a grammatical sense, they are a set of nouns--names given to persons, places, and things--in organizational life. The two most important constructs for our study are "productivity" and "productive scientist."

* Facts "...explain how and why the organization operates as it does" (p. 124). They create the social knowledge of the organization, thus explaining preferred relationships among people, problems, activities, and interests. Two facts that surfaced from our study were "The community of scientists is national and international," and "Recognition [for research] is what's important."
* Practices, or the tasks that accomplish organizational work, tend to be defined initially by supervisors in a formal manner. However, the practices are actualized by organizational members, whose actions may or may not coincide with the supervisory description of those practices. In our study, practices included "sharing information," "testing ideas," and "publishing results."
* Metaphors are comparisons expressed by members of the organization in explaining organizational life. They display insider argot (vocabulary) in ways that can prove helpful in understanding how members structure their experiences. Examples of metaphors from our study include the analogies of productive scientists as "stars in the network" or "conduits."

Definitions of Productive Scientists and Standards of Productivity

We identified four different perspectives on research productivity. These represented university-wide administrators, college Deans, Department Chairs, and faculty.

A. Perspectives of administrators--The Academic Vice President at the studied institution was the highest official responsible for evaluating research productivity. He pointed out that current university productivity standards were outlined in the Faculty Handbook, which stressed the importance of high-quality teaching, research, and service. The Handbook advised that:

> [i]n all instances excellent intellectual attainment is...the crucial qualification for appointment or promotion to a tenured position.

The Handbook did not quantify how productivity should be evaluated; rather, it stated that such qualities as "intellectual competence, integrity, and independence," "work in progress," "genuine scholarship, productivity, and creativity in the form of such things as published research or recognized artistic production, or engineering designs," must be present.

The Vice President described the problem of measuring productivity this way:

> Historically, there is a general consensus in the academic world of what standards of productivity are. They are not written down anywhere. The expectations are more specific in some departments--for example, a book is expected or perhaps refereed articles.

We asked the Vice President to define "a productive scientist." He distinguished a nonproductive scientist from a productive one in this way:

> You could have a person as busy as hell in the lab but who never shares information or tests his or her ideas in the peer editorial review system or in terms of getting grants or support. This person is not productive because he or she is not contributing to the body of knowledge. One of the traditional ways the social attributes of a productive scientist are manifested is through the review and publication process and the willingness to expose ideas to review by experts. A nonproductive person either is not willing to expose ideas to scrutiny or has nothing to expose.

This definition focuses so completely on the importance of communicating results that the activity leading to those results is justified only by their communication. The first paragraph of this text describes a virtual struggle between heaven and hell. The reference to "hell" conjures up images of a scientist working as if damned and separated from the community of scientists just as the damned are separated from the communion of saints. The quotation makes a claim of fact: The overworked but unpublished lab scientist is not productive. A productive scientist must perform two tasks (practices): sharing information or testing ideas in the editorial review system --i.e., seeking publication or grant support.

The other administrators in our study also mentioned publication in their definitions of a productive scientist. Tied in with publishing was the notion of working with graduate students and (mentioned less frequently) obtaining grants. One university administrator expressed this view:

> One would expect grant activity, lab activity, publications and abstracts, and some graduate student supervision.
>
> (Chair, Academic Affairs Committee)

This portrait uses metonymy to show us a productive scientist, portrayed as three kinds of activities and two concrete products. It is notable that the phrase "writing activity" is omitted, leaving unspecified the link between the mentioned activities and products.

The administrators in our study typically agreed that the general standard of productivity is that someone should be continuously engaged in "significant and quality research"; however, evaluations of both the significance and the quality of the process are based on review of the product. For example, the Academic Vice President argued that:

> Significance refers to something of national or international scope and impact. Quality refers to good stuff that is verifiable and statistically valid. External review is important to determine both significance and quality.

Similarly, recognition by peers, particularly those outside the university, was considered important. The Vice President continued:

> The community of scientists is national and international. In the literature on scholarly communication you find that if there are 1,000 biochemists working in colleges, there is an informal network among them nationally. The stars in this network are the major conduits of information. A productive scientist is generally viewed as being a part of this network--either through publication only or, for those who don't publish much...[through] reviewing or grantsmanship and attendance at national meetings. Recognition is what's important.

This Vice President's own academic discipline is in the physical sciences and the metaphors in this statement are consistent with such an orientation. He compares disciplinary communities to a physical structure--a network--and the most productive scientists in those communities to stars and to conduits--natural or constructed features of the physical world. The essential claim of fact in these metaphors is, "Productive scientists communicate with spatially distant colleagues." The practices through which this communication is accomplished are publication, reviewing, grantsmanship, and attendance at national meetings.

B. Perspectives of college Deans--When asked how the productivity of the agricultural college is measured, one of the Deans agreed with university administrators that productivity standards are implicit, not explicit:

There are implied standards, not written ones. I don't think there are any [college] standards above and beyond what the university as a whole has. There's a rather loose definition of scholarly activity, and it varies from department to department.

Another of the Deans, however, did define the standard he uses to evaluate a scientist's productivity:

We like to see publications, at least one publication per Hatch [federally funded] project per year, on the average. [The researcher] probably won't be able to have a publication the first year or two of a project, but there should be something coming along from another [Hatch] project. We look at the number of publications and the amount of external funding.

Indeed, each of the Deans mentioned number of publications as a measure of productivity. However, they disagreed somewhat concerning whether certain types of publications ought to "count" more than others:

There's no question that in the hierarchy, refereed journal articles are at the top of the list. There's a certain amount of stature with that type of article. But you have to use a certain amount of common sense.... [S]ometimes...research...is not adaptable to refereed journals.

(Dean A)

I don't rank [publications]. A publication's a publication. ...The folks in [the College of] Arts and Sciences on the Academic Affairs Committee need to be educated as to why our people are hired and what they're supposed to do, [why they write the] publications they write.

(Dean B)

The second Dean quoted above explained that because of the special mission of the college of agriculture (to meet the needs of the state first of all), other types of publications than refereed journals (and, indeed, even presentations) may be more appropriate measures of productivity.

C. Perspective of Department Chairpersons--Department Chairs defined a productive scientist somewhat differently than did administrators. While all of the Chairs mentioned publications that have been reviewed by peers or professionals as a measure of a productive scientist, often they qualified their remarks. For example, one Chairperson said:

I don't exactly go along with the university standard of required refereed journal articles. I expect on a regular basis that a person will produce a research publication for various audiences. Research data are not a product; products are not only publications though.

This Chair uses metaphorical language that clashes with the expectations of the university administration. Whereas the Academic Vice President envisions a productive scientist as a

conduit of information to nationwide disciplinary communities through refereed journals, this Chairperson expresses an explicit preference for dispersing findings to different audiences in different forms, echoing the approach of one of the college Deans.

Three Chairs mentioned the importance of making progress by solving "real world" problems. For example, one Chairperson said:

> At a small land-grant university [such as ours] we don't have the depth of faculty to conduct much basic research. We must deal with current problems. A productive scientist looks at problems of the real world--practical problems.

This statement implies that if you lack depth of faculty you prioritize. Explicitly, priority is given to applied not basic research. To this Chairperson, the "real world" is not a community of scientists but laypersons with practical problems.

Three of the Chairs also mentioned presentations as an option for disseminating research findings. One Chair said:

> Productivity implies that you're looking for a product at the end. The ultimate product is a publication or a dissemination or sharing of ideas or findings. This could be a presentation at a scientific meeting....

This position resembles and yet differs from that of the Academic Vice President. Both called for sharing results; however, this Chairperson does not limit sharing to the narrow conduit of national, refereed journals, but also includes dispersal of "seeds of information" to all who need them.

Just as not every planting yields a crop the first and every year, not every Department Chairperson expects annual output of publishable research reports. While two Chairs said that they want annual output, two others disagreed, saying that they are less concerned with annual output than with significant output over time. And in evaluating that output, at least one Chair somewhat reluctantly compared measuring scientific productivity with measuring an agricultural harvest. He said that he doesn't like to "count beans" but did so anyway. To him, a refereed journal article had a relative value of 1.0; a refereed invited paper, 1.0; conference proceedings, 0.75; Extension publication, 0.5 (more value to Extension faculty); and abstracts, 0.25. In other words, to this Department Chair, four abstracts are worth one refereed journal article.

Another Chairperson objected to using the evaluative construct "productivity" to measure outcomes of scientific research:

> The term "productivity" is pejorative. It connotes a production line with workers mechanically stamping out research. It's an abhorrent concept in a collegial university.

The claim of fact embodied in this Department Chair's statement is that the work of a university scientist is qualitatively different from that of a factory worker who "mechanically stamp[s] out" units of production, and should be evaluated in that light. Sometimes, according to some Chairpersons, department standards differ from those of the Deans or university administrators. In addition, there may be no consensus within a department. Here are the views of one Chairperson:

> The standards are whatever the faculty feels they are and this varies among the faculty. My standards are that a person needs to be committed to doing research, must take responsibility for doing research over time, and write publications to disseminate information....I try to tell the faculty my standards, but they are different from [standards] they hear elsewhere. You are told that you have to do research and you have to publish. The number of publications is important. You hear very little about quality research by anyone.

In general, Department Chairs expressed confusion or dismay about what is expected of their faculty. One Department Chair called for clearer guidelines from the college Deans:

> There is not a precise standard. We need a better idea from the Deans....Does [someone whose appointment calls for] 20% research time mean one publication per year?...These figures could come from a broad survey of the College. I need such a standard so I can say to my faculty, "You've met expectations...."

This Chairperson wanted a simplification of evaluation criteria that amounted to metonymy. Such criteria would allow the Chair to see a productive scientist as a specific number of publications. That number would vary with the percentage of research time specified in a scientist's job description. A quantity of the construct "research time" is equated with a quantity of the construct "publications," without reference to the process or practices that are needed to bring about those publications.

D. Perspectives of the faculty--On the faculty questionnaire, we received 159 different answers to the question, "What are your department's standards for productivity?" We found some departmental differences in perceived standards. However, "publication" was cited most

frequently in five of the eight departments; in one department, however, it was not one of the top three criteria. Here is a sampling of some of the faculty's responses, which illustrates the differences in perspectives and procedures used throughout the college:

> [Our standards are] not clearly identified or at least we have not discussed publicly what our standards are.
>
> ---
>
> [The] scientist establishes goals for the year and the chairman discusses accomplishments at the end of the year.
>
> ---
>
> Our department, as a group, has about as much nonproductivity as I have seen. If you want to see poor planning and wasted time, our department is an excellent example. I believe we use "publications" as standards for judging productivity, but if you look closely at our list of "publications," most are in nonrefereed journals.

We also asked the faculty how they learned about their departmental productivity standards. The Chair was the most common source of information, either through face-to-face communication, an evaluation form, or departmental retreats and staff meetings.

There was no pattern in the faculty members' responses to whether their Department Chairs defined research productivity primarily in terms of numbers of publications. About the same percentage agreed, disagreed, were unsure, or did not respond to the question. However, 60.8% of our respondents believed that the Deans defined research productivity in terms of numbers of publications; 63.1% believed that the college Faculty Standards Committee and the university-wide Academic Affairs Committees did; and 56.5% believed that the Academic Vice President did.

About 83% of the faculty believed that publishing the results of their research for their peers is important. In addition, 50% believed it is important to publish the results of their research for lay readers, which may reflect the notion that the college of agriculture has a special mission to serve the needs of the people of the state.

About one-third of the faculty believed that it was possible for someone to be a productive scientist without publishing the results of his or her research. Another 56.9% said that this was not possible, and 10.3% gave qualified responses (e.g., "I suppose it's possible, but I don't

know how."). Those who answered "yes" tended to cite teaching, consulting, other forms of communication, or being a nonwriting member of a research team as ways to be a productive scientist without publishing. These quotes exemplify this point of view:

> [You can be productive] by giving papers at meetings for professionals.

> If research is directed towards enlightening students [and] associates, it can be considered "productive"; otherwise no.

Those who answered "no" generally insisted that research was incomplete without the published dissemination of results. These quotes exemplify this viewpoint:

> A productive scientist must complete the following: 1) proposal, 2) lab work, and 3) report (both oral and in writing).

> What is productivity if you can't point to a product?

While many of the faculty considered publication of results a necessary part of scientific productivity, as a group they were not--as were the administrators and the Department Chairs--unanimous in this belief.

Faculty within the college of agriculture tended to define productive scientists in terms of the research they do (e.g., important topics, good methodology, useful findings) and their personal qualities (e.g., well-organized, motivated), and not so much in terms of measurable output. For example, two scientists defined productive colleagues in these ways:

> An individual who has highly organized time and activities which lead to excellence in teaching, publications, and research progress. A person who, in the end result, has many things to show for time well spent.

> A researcher who finds answers to important questions and makes them available to those who need to use them.

Time is money in the first quotation. The personal quality of being organized leads to demonstrable excellence in teaching, publications, and research progress. The second quotation

reminds us that the goal of a search is discovery, and that what characterizes a productive scientist is the ability to identify important questions.

Nearly two-thirds (63%) of the faculty responses to the question of what constitutes a productive scientist referred to the nature of the scientists' research and to the scientists' personal qualities. Far fewer responses dealt with output. For example, only 18.6% of the faculty responses dealt with publications. If we add in presentations, grants, and other activities (such as consulting), the total only reaches 32.6%. In other words, when defining a productive scientist, some faculty appear to place less emphasis than do university and college administrators and Department Chairs on output, and more on the importance of the research and a scientist's personal characteristics.

And yet, faculty did not agree on what makes someone productive. The following quotes exemplify contrasting opinions:

> [A productive scientist is] one who publishes in a scientific journal on the average of l/year for ...three years, presents at least 2 papers/year, and writes articles for trade magazines, miscellaneous publications, and [gives] radio and TV interviews.

> [A productive scientist] continues to develop hypotheses and test them, relates the results of experiments to others...[and] keeps up [with scholarship] in the field or fields of his or her choice.

The first quote emphasizes product, whereas the second emphasizes process. Practices include both publishing and presenting; audiences include both scientific peers and lay constituents. A scientist who accomplished all these things would be considered "productive" by essentially everyone who participated in our study.

The image in the second quotation brings us full circle: the "busy scientist" here is similar to the "busy as hell" scientist mentioned by the Academic Vice President. However, the university administrator sees distribution as the only important aspect of productivity, while the faculty member defines a researcher's productivity as performances that produce knowledge in addition to those that make it available to others who need it.

The metaphor in this second quotation draws upon the image of a farmer's field when discussing a researcher's area(s) of expertise. By extension, and consistent with images offered by Deans, Department Chairs, and other faculty, this metaphor evokes another comparison--this time between the traditional work style of the farmer and that of the researcher, from the planting of the seed to the harvesting and distribution of the crop.

Conclusions

Judgments of productivity ultimately are subjective evaluations by human beings who are influenced by subtle and not-so-subtle pressures to maintain certain, often undefined standards of excellence. The best that can be expected (without having rigid, quantitative measures that may be in no one's best interest) is to encourage constant dialogue among administrators, Department Chairs, and faculty concerning their expectations and their evaluations of how well people are fulfilling them.

Clearly there is not a consensus--as was suggested by the Academic Vice President--of what the standards of academic productivity are. Depending upon a person's place within the university or college hierarchy, different standards of productivity and different definitions of a productive scientist exist.

University administrators view the university and its scientists as part of a global community linked by communication of research findings. Deans see their college not only as part of this global community but also as answerable to constituents who fund their work at this public, land-grant institution.

At the Department-Chair level, a breakdown in communication becomes apparent. The Chairs express confusion and in a couple of cases rebellion about what is and ought to be expected of their faculty. Faculty responses indicated emphasis on process as well as product; activity of all kinds was part of the picture of a productive scientist. Some even said a scientist could be productive without publishing--through teaching or as a nonwriting member of a research team.

If discourse related to productivity is to be promoted in this college of agriculture, the dynamics that fostered the development of a false consensus will need to be confronted. By juxtaposing the metaphors used at four distinct levels of the university hierarchy, we can see that apparent agreement on an image of a productive scientist masks substantial disagreement. Lakoff and Johnson (1980) have argued that one's set of metaphors largely constitutes one's reality. The metaphors we analyzed portray different realities. Our report portrays those different realities so that individuals at all levels of the organization may see beyond their own meanings for the term "productive scientist."

However, becoming aware of different definitions of productivity may not necessarily lead to a negotiated consensus of what the term should mean. If the goal of increasing research productivity is important enough to all concerned, fundamental reform in university administrators' management of professional research scientists is necessary. The "publish or perish" dictum that still reigns supreme on university campuses today must be reexamined and realistic expectations negotiated, clearly expressed, and fairly enforced.

Interpretive research can disclose multiple perspectives on an organizational problem such as the research productivity in this particular college of agriculture. But moving from disclosure to institutional reform is not automatic. A first step is to negotiate the meaning of "research productivity." Writing workshops might eventually be appropriate, but only after faculty and administrators agree as to their importance in achieving personal and institutional goals.

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